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EXAMINER

GEISEL, KARA E

ART UNIT

PAPER NUMBER

2877

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|-----------------|---------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/524,467 | GANDHI ET AL. | |
| | Examiner | Art Unit | |
| | Kara E. Geisel | 2877 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-14 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>0405</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Preliminary Amendment

The preliminary amendment filed on February 14th, 2005, has been entered into this application.

Information Disclosure Statement

The information disclosure statement filed April 29th, 2005 has been considered by the examiner.

Claim Objections

Claims 4-5, and 12 are objected to because of the following informalities:

Regarding claims 4-5, the phrases "preferably" and "more preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claim 12, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1-4, 8 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Theriault et al. (USPN 6,147,754).

In regards to claim 1, Theriault discloses a method, which would be suitable for stand off analysis of a sample comprising one or more chemical and/or biological warfare agents of low volatility (column 1, lines 28-32; the device is capable of determining any contaminants in a soil, which could include chemical or biological warfare agents) comprising using an excitation means to vaporize a sample thereby producing a vapor plume of molecular species (fig. 1, 102 and column 1, lines 43-57; LIBS uses a laser to produce a plasma from a sample, a plasma is defined as a sample that has been vaporized and ionized into its molecular species), and using analytical means (114) to analyze the molecular species within the vapor plume (column 3, lines 49-59) wherein the analytical means analyzes the molecular emission spectra of the vapor plume (via the spectrometer 114) and is provided with means to enable it to receive the spectra for stand off analysis (106, and 110 receive the spectra from the vapor and send it to the spectrometer 114 at a remote position from the sample, therefore defining this apparatus as stand off).

In regards to claim 2, the excitation means is a laser (column 3, lines 60-65).

In regards to claim 3, the laser is operated at a fixed wavelength (column 3, lines 60-65, either at 1064nm or 532nm).

In regards to claim 4, the laser has a power of greater than 10 W (column 4, line 63 - column 5, line 5; the laser must be at a power of .3GW/cm² to vaporize the sample and for a spot with a diameter of .06cm, this relates to an area of .0028cm² and a power of .00084GW).

In regards to claim 8, there is only a single excitation means (fig. 1, 102).

In regards to claims 13-14, Theriault discloses a kit/apparatus (fig. 1) suitable for stand off analysis of a sample comprising one or more chemical and/or biological warfare agents of low volatility comprising an excitation means (102) arranged such that it can be used to vaporize the sample thereby producing a vapor plume of molecular species (fig. 1, 102 and column 1, lines 43-57; LIBS uses a laser to

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produce a plasma from a sample, where a plasma is defined as a sample that has been vaporized and ionized into its molecular species), an analytical means (114) arranged to analyze the emission spectra of the molecular species within the vapor plume, and means associated with the analytical means to enable the analytical means to receive the emission spectra from the vapor plume (106 and 110).

Claims 1-3, 7-8, and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Chadwick (USPN 6,771,368).

In regards to claim 1, Chadwick discloses a method, which would be suitable for stand off analysis of a sample comprising one or more chemical and/or biological warfare agents of low volatility (column 1, lines 6-13; the device is capable of analyzing any sample of interest, which could include chemical or biological warfare agents) comprising using an excitation means to vaporize a sample thereby producing a vapor plume of molecular species (fig. 1, 10 and column 3, lines 15-25), and using analytical means (26, 30 and 34) to analyze the molecular species within the vapor plume (column 3, lines 49-59) wherein the analytical means analyzes the molecular emission spectra of the vapor plume (via the spectrometers 26, 30, 34) and is provided with means to enable it to receive the spectra for stand off analysis (as shown in fig. 3, 51 receives the spectra from the vapor and send it to the analytical means 50 at a remote position from the sample, therefore defining this apparatus as stand off).

In regards to claim 2, the excitation means is a laser (column 3, lines 15-25).

In regards to claim 3, the laser is operated at a fixed wavelength (column 3, lines 15-25).

In regards to claim 7, the laser is a carbon dioxide laser (column 3, lines 20-21).

In regards to claim 8, there is only a single excitation means (fig. 1, 10).

In regards to claim 12, the analytical means is an infrared (column 5, lines 49-51) spectrometer (column 5, lines 4-7).

In regards to claims 13-14, Chadwick discloses a kit/apparatus (fig. 1) suitable for stand off analysis of a sample comprising one or more chemical and/or biological warfare agents of low volatility

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(column 1, lines 6-13; the device is capable of analyzing any sample of interest, which would include chemical or biological warfare agents) comprising an excitation means (10) arranged such that it can be used to vaporize the sample thereby producing a vapor plume of molecular species (fig. 1, 10 and column 3, lines 15-25), an analytical means (26, 30 and 34) arranged to analyze the emission spectra of the molecular species within the vapor plume, and means associated with the analytical means to enable the analytical means to receive the emission spectra from the vapor plume (18).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Theriault et al. (USPN 6,147,754) in view of Wikipedia ([http://en.wikipedia.org/wiki/Plasma_\(physics\)#Temperatures](http://en.wikipedia.org/wiki/Plasma_(physics)#Temperatures)).

In regards to claim 9-11, Theriault discloses the method as described above. Theriault is silent to the temperature of the vapor plume, however it is disclosed that the vapor plume is a plasma (column 2,

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lines 65-67). Furthermore, it is disclosed that this device is to be used to measure subsurface soil (column 1, lines 29-32), which would have nearly the same temperature as the atmosphere surrounding the soil.

Wikipedia discloses that even cold plasmas typically have a temperature of several thousand degrees Celsius (§ 3 under "Temperatures"). One thousand Celsius would be 1273 Kelvin. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made that the vapor plume produced in this invention would be hotter than the surrounding atmosphere by at least 5K.

Allowable Subject Matter

Claim 6 is objected to as being dependent upon a rejected base claim, and for the reasons above, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and rewritten to overcome the objections set forth in this office action.

Claim 5 would be allowable if rewritten to overcome the objection(s), set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 5, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method wherein a laser has a power less than 150W, in combination with the rest of the limitations of claim 5.

As to claim 6, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method wherein a laser is operated as a continuous laser beam, in combination with the rest of the limitations of claim 6.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Miles et al. (USPN 5,757,484), and Duer (USPN 5,946,089).

Miles and Duer both disclose a kit/apparatus suitable for stand off analysis of a sample comprising one or more chemical and/or biological warfare agents of low comprising an excitation means

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arranged such that it can be used to vaporize the sample thereby producing a vapor plume of molecular species, an analytical means arranged to analyze the emission spectra of the molecular species within the vapor plume, and means associated with the analytical means to enable the analytical means to receive the emission spectra from the vapor plume.

Examiner's Comment

In regards to claims 1 and 13-14, a recitation of the intended use (lines 1-2, "suitable for...") of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Since both Theriault and Chadwick structures are capable of performing the intended use, these two prior art references meet these claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Kara E. Geisel
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December 21, 2006